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Forest Ecology – A Victorian Perspective

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Forest communities typically are defined by their floristic composition and structure. This data is collected using quadrat based surveys and analysed statistically using a nearest neighbour algorithm. Tens of thousands of such quadrats have been collected across Victoria and this data has been used to identify numerous vegetation communities known as ecological vegetation classes (EVCs). While EVCs are locally based on floristics they are more broadly defined by a consistent set of physical and climatic parameters such as rainfall, aspect and soil conditions. Wet Forest in East Gippsland therefore may have quite different floristics from those in the Otway Ranges, but as they occur under similar environmental conditions, support similar life-forms and have similar structural characteristics they are identified as the same EVC.

The composition and structure of a forest community is also governed by the type, intensity and frequency of disturbance (i.e. fire, frost, disease, wind throw, landslide, timber harvest). Plants recover from disturbance using one or a combination of two strategies including resprouting from an organ (i.e. lignotuber, epicormic shoots, rhizomes etc.), which survives the disturbance, or establishing a new individual from seed or spore. The individual life history strategies of species therefore govern their ability to persist in different ecosystems under different disturbance regimes.

Forests are often described in terms of their age, with conservation efforts often focused on the concept of 'old growth'. This tends to concentrate on the age and structure of the overstorey and time since disturbance. However, studies on the age of different understorey species indicates that some have individuals, if not populations, which are older, sometimes significantly so, than the overstorey. Carbon dating results from common, often dominant, understorey species collected from Victoria's Central Highlands Wet Forest include Soft Tree-fern *Dicksonia antarctica* (5.3 m tall 350 ±50 years), Rough Tree-fern *Cyathea australis* (12.5 m tall 370 ±70 years), Musk Daisy-bush *Olearia argophylla* (~100 years from within 1939 regrowth Mountain Ash *Eucalyptus regnans*) and Tree Geebung *Persoonia arborea* (12 m tall 320–510 years).

These 'old growth' understorey components are often resprouters and can be very influential in both the ongoing structure and composition of the forest and the post-disturbance recovery process. However, where the disturbance is more physical, such as that associated with timber harvesting, these resprouters often fare very poorly in the post disturbance recovery process in comparison to their survivorship after fire. Such changes undoubtedly have ecological consequences for forest regeneration.